firmed by the following vote: Ayes, Mayor Yett, Councilmen Eyres, Haynes and Searight, 4; nayes, none, Councilman Copeland not voting.

The following vids for lignite to be furnished the Water, Light and Power Plant for a period of six months were opened and read:

Bid of C. N. Avery, Agent for the Big Lump & Texas Coal Company, at $2.00 per ton;

Bid of Ira Perry, Agent for Ira Perry Coal Company, at $2.00 per ton;

Bid of C. M. Sessions, Agent for the Rockdale Consolidated Coal Company, at $2.00 per ton;

Bid of J. R. Robinson, Agent for the Calvert Coal Company at $1.75 per ton.

Councilman Haynes moved that all the bids be referred to Councilman Eyres for his report back to the Council. Motion prevailed by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

The Council then recessed.

SPECIAL MEETING OF THE CITY COUNCIL:

Austin, Texas, December 9, 1921.

The Council was called to order by the Mayor. Roll call showed the following members present: Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; absent , none.

Councilman Copeland moved that the report of Frank S. Taylor, Consulting Engineer, and J. M. Bryant, Professor of Electrical Engineering, University of Texas, on the conditions of the Water, Light and Power Department, and also the report of said Frank S. Taylor on rates for said Department be spread at length upon the Minutes of this meeting. Motion prevailed by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

The report follows:

"REPORT ON THE CONDITIONS OF THE

WATER AND LIGHT DEPARTMENT

OF

THE CITY OF AUSTIN, TEXAS,

By

FRANK S. TAYLOR, CONSULTING ENGINEER,

AND

J. M. Bryant, Prof. Electrical Engineering, U. of T.

THE PURPOSES OF THIS REPORT.

The purposes of this report are:

(1) To show the history and purposes and the conditions of cost, maintenance and extension of the water and light plant and distribution lines, and its idle Hydro-Electric Plant.

(2) To show the value of the water and light properties, for the purpose of determining the amount of annual depreciation.

(3) To show fair costs of operating, maintaining and extending the plant and distribution systems.

(4) To show the revenues from operation and to analyse and compare these revenues with operating and other necessary costs; to show the City's relation to the Department, and to determine and show from these conditions the amount of net operating surplus or deficits.

(5) To show the Plant's present capacity and future needs for equipment to furnish services, the demand for which may be reasonably expected and if necessary to recommend additional equipment, its character and capacity.

(6) To show the possibility of the Department's assuming the Street Car Company's and Ice Company's loads, and, if possible, then to fix rates for such classes of service.

This report is not required to show either economies or efficiencies of operation or administration, nor to fix rates, except in the single instance mentioned, nor is it an audit of financial records.

CONCLUSIONS.

(1) The Austin Water and Light Department began operation with the completion of the old Dam in 1893, the initial plant cost was $1,600,000. After the failure of the Dam in 1900, the City purchased the privately owned Water Works, and commenced its steam operated plant for electric power at the location of the Water Works Plant, which is the location of the present power house. The Dam was rebuilt in 1915, but is not yet accepted by the City, when accepted it becomes part of the operating plant of the Water and Light Department, the Department receiving all power produced, according to the contract, at a maximum cost of 1.2¢ per KWH . or less than 1/3 of the present production cost. According to the same contract, no payment on the Dam can ever become due from the City, except for power actually metered in the City' Power House.

(2) The book value of the properties of the Water and Light Department is approximately equal to the present replacement value, and is adopted as a basis for computing Depreciation.

(3) The Recorded Costs of Operation, Maintenance and Additions to the plant for the year ending September 1, 1921 are adopted as being a fair basis for the same kind of costs for the next three years, except in the matter of additions to plant, which is taken as the average of ten years.

(4) The Revenues for the cited year showed a deficit of approximately $20,000 with only 30% of the year's depreciation paid, if this depreciation had been allowed in full, the deficit would have been approximately $57,500. If no payments had been made to the City, and the average cost of additions had been made, and full depreciation allowed, the net surplus would have been

approximately $20,000. The total deficit in Working Capital on September 1, 1921, was $102,000. The present rates would pay this deficit and average additions to plant in 5 years. The additions to plant however, for the next year, are estimated at $234,000 for which the present rates cover only $80,000, leaving $174,000 to be provided. The addition of 1% to rates would produce approximately $4,500 in one year. It is recommended that the City furnish $300,000 by bonds to the Department, and fix a 12% addition to rates, or revenues, which could be made by changing the present rates to a logical schedule without raising the minimum, the Department could then pay off its deficit, make the needed additions, and pay the City $50,000 per annum on its debt. The City has no authority to take money from the Water and Light Department except for debt, and only from a net surplus, but the City may properly fix rates to create a fund for the amortization of the Department's debt.

(5) The Operating Boiler Plant is at present barely sufficient for the power required, but the new boilers, being installed, will provide sufficient capacity for several years. The Electric Plant should be provided with another 2,000 KW unit at once, to be installed within a year; the two smallest Electric units are obsolete and inefficient and should be taken out after the new unit is installed. The Pumping Plant is sufficiently equipped for several years. The Water Supply Devices and Structures are inadequate and inefficient. The Department is testing for Artesian water, which may result in an adequate supply of potable water. If the test fails, a system of settling basins for water softening, purifying and filtering is recommended to provide water of proper quality for the present and future needs of the City.

(6) It is impracticable for the City Plant to carry the Street Car Company Load at present, because of its magnitude and character, but provisions should be made to carry this load when the conditions warrant it. The Ice Company load may be carried as soon as ready, because of its limited peak and constant 24 hour demand. The proper rate, for this class of Power, when safeguarded by contract to pay 66-2/3% of expected monthly load as maximum charge, is ".5 cents per KWH. based on 90% Power Factor.

(Sgd) J. M. Bryant,
Prof. Electrical Engineering, U of T.

(Sgd) Frank S. Taylor,
Consulting Engineer.

November 1921.

SOURCES OF DATA AND ACCURACY.

The data used for the findings of this report are obtained from:

Reports from the Water and Light Department for 1895, 1912, '13, '14, '15, '16, '17 and '18.

Abstracts of the Records of production at the Power House.

Abstracts of the Records of Coal Consumption at the Power House.

Abstracts of accounts furnished by Mr. Christian, Chief Bookkeeper of the Department.

Abstracts from customers ledgers compiled by the ledger Clerks in the Department office.

Various statements from Mr. E. C. Bartholomew, former Commissioner, Mr. W.P. Johnson, Superintendent of Plant and his assistant, Mr. Newton.

The Power House records are methodically kept and are complete for all items for which metering devices were available, since 1908. All data taken from these records were obtained with facility, and special mention is here made of the continuous care which has been used to preserve these records.

The accuracy of the report is within the allowable error determined for the purposes of the report, no attempt has been made to get results to the nearest cent, and quantities and amounts based upon estimate are placed at the nearest round figure, since no object would be obtained by expressing such figures in the exact computable Dollar or cent. The data, abstracts and estimates made herein are checked by their source.

HISTORICAL.

The City of Austin, acting as a corporation with power to levy and collect taxes and to issue bonds, did in 1890 and 1898 issue its bonds to buy or to build with the proceeds of tax revenues the initial Water and Light Plant and properties to supply the Citizens of Austin and itself (public requirements) with water, light and power services.

After the plant was in operation the revenues from the services to the citizens, paid for the operating expenses and for the extension of the plant to meet the needs of the City's growth, which extensions paid additional revenues and ultimately provided for the cost of new extensions. The Water and Light Plant paid no taxes nor was it required to produce a net revenue above the costs of operation, but by agreeable practice provided the water and light for the public service as a partial offset to the interest on the tax payer's investment in the plant.

In 1900 the Dam and Power House belonging to the Department, and used for its Water and Electric Plant, was destroyed by flood and soon after this the City bought the privately owned Water Works Plant for the sum of $175,000 and contracted to pay this sum in addition to a debt amounting to $86,000 it owed the Old Company for services.

The contract required the City's payment of $22,500 annually, which was paid by the Water and Light Department out of an annual service charge of $24,000 against the City, the last payment on the old water works purchase contract being paid by the Water and Light Department in 1917.

After 1913, when it appeared that the earnings of the Water and Light Department showed a net surplus, the City stopped its payments for services, except interest, although charges for the services were carried on the Department's books for several years, until charged off by the order of the Council after which it appears, in effect, that the City's services were paid for by the interest on its debt, and payments were made by the Water and Light Department in addition to the Water and Light service to reduce the principal to the tax payer's investment.

No specific agreements, ordinances, rates or rulings were employed to carry out these transaction since 1909, but the requirement for Water and Light services by the Citizens as well as the Public requirement for street and public building lighting, fire protection and for sanitary purposes was provided by the plant through the management of the City

Council under various conditions of expediency and necessity, and the charge for Public Services and the payment to the City for the reduction of the Water and Light Department debt to the tax payers was the result of an agreeable disposition of these obligations.

When the City's first Power Plant, at the Old Dam was partially destroyed, in 1900, that power house and the City's water and electric lines from the Dam to the City were abandoned and services were rendered from a steam power plant at the location of the present one, the City's distribution lines, for both water and electricity, as well as the old Water Company's water lines were then supplied from this station, improvements were made and capacities increased out of the revenues of the plant as soon as possible, and as requirements indicated, until the present plant and business has developed, covering the City with its valuable distribution lines, supplied by a modern Power Plant and supported by a revenue, which for the present year will approach one-half million dollars. The present Water and Light Plant is as modern as can be found in any City of the size of Austin, in the country and the City Commission is to be commended in its policy of maintaining the Plant and Lines. This record can be continued only from continuation of the policy of paying for extensions from the revenues of the Plant.

THE DAM.

The investment of the Water and Light Department in the Dam and Water Power Properties, while not listed in the book values shown, is still the property of the Department upon which it owes the City a balance of over $900,000.

The contract which the City has with the Company to re-instate the Water Power Plant recites that the City is to receive all power from the Dam paying for a maximum of 450,000 KWH. per month @ 1.2¢ per KWH., no charge being allowed for any excess above the said 450,000 KWH. per month. The contract is so drawn that, if less than 450,000 KWH. per month is delivered, the price paid per KWH by the City is less. The contract provides that the Dam, Reservoir and Power House be kept without defect for 20 years, after which time the payments by the City are terminated, and the plant becomes free from further obligations by the City. The contract has never been completed, however, although the reservoir of 10,000,000 Gallons capacity, which is a part of the contract, has been in use by the City for several years and the Power House equipment at the Dam is complete.

The City's interest, at present, is being entirely lost because of legal conditions, which seems to prevent the use of the property.

If the City could accept the property under the conditions of the contract, it would have possession of the power, and would be under no obligations for any payment until the Dam was completed in full accordance with the contract specifications, and, according to the contract, the City would never pay a cent for the power, though having a full use of same as long as any defect existed in the Dam, Power House or Reservoir, when such defect was remedied the City must then pay for the power received, if any, during the existence of the defect.

If the City could obtain possession of its contract rights in the Dam and Hydro-Electric Power, the plant there should be operated to supply the City's needs for power whenever the water is sufficient. When the water in the river is not sufficient for the entire needs then the Water Power plant should be used to supply the peak load and as much of the "flat load" as the quantity of water would permit.

THE CITY'S RELATION TO THE WATER AND LIGHT DEPARTMENT.

A municipally owned Utility should pay to the City all moneys advanced by the City for its plant and extensions, and may legally make rates for service to cover the amortization of such debt within a reasonable time, as evidenced by the following citation:

"A town operating a municipal electric plant should earn enough to pay operating expenses, to care for depreciation and to provide a sinking fund to pay off the bonded indebtedness standing against the plant." Bonzer V. Electric Light Comm. (Me) P.U.R. 1920, F, 183.

No such rates may be charged, however, as would be indicated from the extract taken from the Annual Report of the Mayor and other Officers of the City of Austin for the year ending November 30, 1895.

"Our debt should be regarded as an investment of $1,660,000 in a water power, water, electric light and electric power plant of great value to the City, the yearly revenue from which will pay interest and sinking fund upon its entire cost, and finally wipe out our entire indebtedness, thus paying for itself and remaining a blessing to our people for all time to come."

Rates for service to provide revenues for such purposes would be improper because they would impose a taxation, which had no relation to property values, this discrimination would make such rates unfair to customers and could be legally revoked if placed in effect.

The City of Austin, as a body corporate, has power to impose and collect taxes for the support of its government and to pay the expenses of the Public Requirements. Expenses for benefits enjoyed in common or for inseparable common interests; such as street improvements, fire protection, schools, police supervision and protection, etc., are and should be paid by the City out of its public revenues, produced by equitable payments by all citizens in proportion to their actual interest (property value) in the City.

The municipal plant was started when a majority of the Citizens of Austin elected to furnish its own water and light services to the people, but the benefits of such services are not proportionate, nor do they bear any relation to the money paid by service takers in taxes. Some tax payers do not use any of the services, while there are service taker who do not pay any taxes.

The incentive theory provides the logical reason for a municipally owned utility. The City assumes that with services of high quality, furnished without profit, that the City will be benefitted by thus establishing advantages in living conditions, which will increase population and enhance the values of property in the City. The Water and Light customers, who are largely the same people as the tax payers, pay for Water and Light services according to the <u>value of such services,</u> the measure of the cost of which value includes the repayment of the

cost owed for the plant, but has no relation to repairing streets or any other cost of maintaining the common property of the City.

It follows therefore that the Water and Light Department owes the City the balance of monies advanced, but when the City desires the Department to pay its debt, then such rates must be charged as will produce the amount which it desires to withdraw, besides paying for all fair costs of operation, Depreciation, Additions to Plant, Emergencies and Contingencies. Rates which could provide for the amortization of the $916,000 debt and all of the said costs and expenses within a reasonable period would be proper, business-like and legal, and such rates would still be within the fair value of the Water and Light services.

Attention is called to the fact that the use by the City of Electric Power for Street Lights, building lighting, etc., as well as the use of water for fire protection, sanitary purposes, etc. is for the entire population and as such is a proper charge against the income derived from taxation. In consequence, the payment of the interest on the bonds of the City, issued to cover the debt of the Water and Light Department property, is a correct charge to income from taxation in so far as it balances the value of the service to the City.

It would be expected that such term of years would be adopted as will retire the bonds at their maturity. During this time the amount paid by the City for its services would be increased in proportion to the diminution of the debt and to the requirements of the City for Water and Light.

PAYMENTS TO THE CITY.

The original investment by the City of Austin in the Water and Electric properties and plant, was made from the proceeds of the $1,600,000 of Bonds issued in 1900 and 1903, to build the Original Dam and provide the Water and Electric plant and distribution systems.

The value of the properties, used and useful in the Water and Electric service, for the purpose of fixing the debt due from the Water and Electric Department to the City, must be considered as the entire $1,600,000 since the entire obligation was undertaken by the City for the purpose of providing Water, electric Light and Power services to the Citizens and to the City for its public requirements.

The City , out of its tax collections, has paid the interest and principal on these bonds up to date, except the sums paid by the Water and Light Department since 1900, and shown on a separate exhibit in this report.

The City received from the Water and Light Department, all water and electric services needed for Street Lighting, Fire Protection, Water and Lights for its Parks, Buildings, Schools and Sewer system and other public requirements without additional charge, these services being rendered substantially as an offset for the City's payment of the interest on the debt mentioned.

The privately owned Water Works Plant and system was purchased by the City for the Water and Light Department, and its properties were added to the municipal plant. The cost was $175,000, which amount was paid entirely out of the earnings of the Department, both interest and principal, so that the debt to the City is not increased by any part of this transaction.

The payments for the old Water Company plant were charged to Additions to Plant , but are not entered as a credit to the City. It appears that while the

values were of such character as could be properly entered into Plant value, the purchase also represented an intangible value together with the physical property which added to the worth of the City's plant. Since it is not logical to enter any intangible value to a municipally owned plant value, and since the values of the old plant are already added, it appears proper to take these charges for the payment of the old plant out of the account against the City and place them in the annual expense accounts for the plant operation in those years in which the payments were made; another sum , amounting to $86,000 , was also paid to the Old Company by the Water and Light Department but this payment was for a separate debt owed by the City, and is therefore charged to the City.

It is shown on the Table of "Payments made to the City", that the Department has paid on Bonds, General Expense, other than Plant operating Expense, Sewer System Purchase and Expense including the $86,000 paid to the Old Water Works Company, etc. the sum of $683,677, in addition to the payments for the old Water Company property. Deducting this amount from the total indebtedness to the City of $1,600,000 , leaves a balance of $916,323, which amount now appears as a balance due from the Water and Light Department to the City.

It is recommended that an account be made by the City, with this charge as a balance due by the Water and Light Department, that interest at the rate of 5% per annum be entered against the said account, and that a credit be made monthly, or annually, for the Department's charge against the City for Water and Light services. This charge could legally be made so that it would approximately balance the interest charge. If it afterwards appears that the Department has any <u>net</u> surplus, the amount of same or any part thereof may be withdrawn by the City and credited to this Department account.

This Report does not discuss the Plant Value, Maintenance or Operating Expenses of the Sewer System, but it is suggested that if the Sewer System be made a part of the Water and Light Department, the same accounting methods for service charges, credits on debt to City and costs of operation and maintenance are suggested for the Sewer System and service, as herein discussed and applied to the Water and Light Department.

The item of $86,000 paid by the Water and Light Department is not included in the "Table of Payments to the City". The amount was paid in several different annual installments previous to 1910, and was in payment of a debt incurred by the City to the old Water Company previous to the establishment of the municipal plant.

The $41,868 recorded as paid in 1916, is vouched for by Mr. E. C. Bartholomew, and is therefore shown in the payment for that year, but no supporting charge for said payments appear on the records. A table of payments by the Water and Light Department to the City follows:

PAYMENTS MADE TO THE CITY

By the

WATER AND LIGHT DEPARTMENT OF AUSTIN, TEXAS.

1910	Paid for Bonds	$29,000	$29,000
1911	" " "	500	500
1912	" " "	5,000	5,000
1913	" " "	19,000	19,000
1914	" " "	49,008	49,008
1915	" " "	22,850	22,850
1916	" " "	16,500 41,868	58,368
1917	" " "	42,087	
	" Sewer Department	30,000	
	" " "	11,280	
	" to City General Revenue fund	49,875	133,242
1918	" for bonds	39,000	
	" Sewer Department	22,000	
	" to City General Fund	8,009	69,009
1919	" for Bonds	39,000	
	" Sewer Department	6,127	
	" to City General Fund	15,456	60,583
1920	" for Bonds	39,000	
	" Sewer Department	10,012	
		500	
		10,500	
		750	
	" to City General Revenue Fund	4,532	
		10,000	
		4,000	
	" Park Fund	2,000	
		1,780	
	" City General Fund	13,793	
	" Barton Springs note and int.	14,800	111,667
1921 - 8 mos.	Bonds $39,000; Sewer $250		39,250
			$597,677

ADDITIONS TO PLANT VALUE

A municipal plant for water and light services has no way of obtaining money for necessary plant and line extension except to provide it through the earnings of the plant , If money is provided by the City's bonding, then the plant owes this money to the City, and should repay it, both principal and interest. There seems to be no question of the right of a municipal plant to extend its services anywhere within the City's limits, so long as the service provided by such extensions furnishes enough revenue to pay all proportionate costs of operation including depreciation and to provide a reasonable amortization of the cost of the said extension. The municipal Water and Light Department would not only have the right to make these additions, but its failure to do so under the conditions described would be discrimination and the City could be required by law to furnish the said service under the stated conditions.

It therefore appears proper and necessary for the Austin Water and Light Department to fix such rates for service as will provide the revenues for the necessary improvements. From the records for the years since 1909, it appears that the annual amount necessary for additions to plant value has averaged about $80,000. The Department has always paid for its additions to plant value; classified in the Company's records as "Water Plant Betterments", Water Line Extensions", "Electric Plant Betterments", and "Electric Line Extensions" from

its operating revenue. These additions to plant value have amounted to $1,014,000 since 1908, besides which sum the Department paid during the same period about $200,000 on the debt to the Old Water Company, which being previously added is not included in the $1,014,000 mentioned.

The book value of the plant is the accumulation of Costs, less the small sums which have been received from the sale of obsolete, inadequate or junked machinery and materials. This book value does not represent the cost of the present plant, since parts of the plant value have disappeared and have been replaced by new parts, the costs of which new parts being added to book value, making a double charge for the same item. The proper method for providing and accounting for Plant Values represented by the additions to the same would be to credit salvage and junk values to General Revenues, deduct the replacement cost new from the plant value, and to have a depreciation reserve to supply the new value up to the capacity of the part replaced.

However, the market price for the materials, machinery, labor and real estate has advanced during the last few years to such an extent that the present replacement value of the properties of the Austin Water and Light Department is estimated to be approximately equal to the value as shown on the books.

THE PRESENT ACTUAL COST VALUE, represented by replacement costs, new, less depreciation, would have a reduction on the annual book values, according to estimate explained in "Analysis of Operating Statistics for the Year ending Aug. 31, 1921", of approximately 3.4% less 30% of maintenance charges, as accounted for by the present bookkeeping practice, and since the total Maintenance charge is approximately equal to the fund required for depreciation, the 30% is applied to estimates for depreciation Applying this reduction, which is called "net depreciation", since 1908, the actual value at any time since 1908 appears as follows:

TABLE SHOWING ACTUAL COST VALUES.

1908 to Sept. 1, 1921.

YEAR	ADDITIONS	BOOK VALUE	NET DEPRECIATION	ACTUAL VALUE
1908		$ 612,000	$ 44,000	$ 568,000
1909	$ 58,360	670,360	16,300	610,160
1910	56,393	726,753	17,500	649,053
1911	90,684	817,437	19,800	719,937
1912	73,866	891,303	21,300	772,503
1913	89,334	980,637	23,400	838,437
1914	100,094	1,080,731	25,800	912,731
1915	96,353	1,177,083	28,400	980,683
1916	45,083	1,222,166	29,450	996,316
1917	132,104	1,354,270	32,600	1,095,400
1918	86,271	1,440,541	34,650	1,147,441
1919	31,988	1,472,529	35,450	1,143,979
1920	65,560	1,538,089	37,050	1,172,489
1921 8 Mos.	88,648	1,626,737	26,000	1,235,137
		Forward -	$391,600	$1,626,737

Amount Forward -	$391,600	$1,626,737
Total book value August 31, 1921 -		$1,626,737
Total Depreciation		391,600
Actual cost value less depreciation		$1,235,137

DEPRECIATION RESERVE

In Municipally Owned Public Utility Plants.

Depreciation Reserve for a municipally owned Public Utility differs from that which would be allowed on a privately owned plant of the same kind, in that the reserve provided for the depreciation in the privately owned plant is required to provide for the loss in the value of the plant as measured by the Cost , thus protecting the integrity of the investment. A municipal plant for the public service has its investment for the sole purpose of giving service to its citizens and to itself, that is, for the Public service in the City, after the plant is established, the continuation of the service depends upon the operating condition of the various units of the plant. The depreciation reserve must protect the thing regardless of the cost, since the thing will have to be replaced when it is worn out in order to continue service. A specific unit may require more than its original cost to replace, because of the difference in the money market, the improvement in the art of production by that kind of unit, or on the other hand it may cost less for the same reasons, or because it may be replaced as a fraction of a larger unit of the same kind. It is obvious that the present Water, Light and Power customers of the City of Austin have no right to wear out the present plant without providing by replacement of the part worn out, for the plant which is to supply service for the next year. The amount collected for services for any year should include the cost of all repairs and a reserve for that wear and tear, rot, rust, and other causes for loss of value which have not yet developed to the extent requiring replacement, which is called latent depreciation, and which, though not visable, or in many cases not appreciable, nevertheless, surely detracts from the value, by shortening the life of the plant.

A Depreciation reserve for the purpose of replacements in a municipally owned plant , however, is necessarily measured in money value. In order to be sufficient, the Reserve must supply the cost of the new unit of the same capacity, at the time of replacement, as the one which is worn out, and this cost, which will of course be paid in the distant future, can not be known now, nor can it be estimated by any fixed rule, since conditions which cannot be foreseen will influence that cost. A particular unit may disappear by obsolesence and be abandoned entirely, in which case the fund provided for the replacement of the obsolete part of the plant, would be logically applied to the payment for that improved plant which supplies the same capacity for giving the service formerly furnished by the abandoned parts of the plant. An application of this rule would be the prospective replacement of the Compound Engine and Generator, now a useful part of the City's plant.

The replacing unit will doubtless be cheaper per unit capacity and will be more efficient in operation. The reserve for the replacement of this unit would be used so far as may be necessary for the cost of replacing the same capacity in the new unit, the balance of the reserve for this item would remain in the general depreciation fund to provide for the costs of replacing such items as exceeded the amount which had been provided for their replacement.

It is obvious that addition to the size and value of the Municipal Plant, required by the growth of the City, will require additional reserves for depreciation, such additions being classified according to their expectation of life and to their estimated replacement cost, the corresponding amount as indicated by the rate applied to said costs being added to the annual charges for depreciation.

Depreciation, even when due to every cause, wear, tear, rot, rust, obsolesence, inadequacy, damage or the public requirement, does not always operate to the entire extinction of the value, many machines and materials having a residual value which do not change in character, but do change in money value. When a machine or material has lived its useful life in the plant for which it was designed, it may yet be used to perform its functions in another plant, or may be refabricated into new machines or materials. In the former case the salvage value, and in the latter case the junk value should be logically deducted from the account upon which the rate for depreciation is based. In practice, however, it is usual to neglect these values, and to credit the receipts from these sources to operating revenues, thus, in effect, providing the credits for salvage and junk deductions, and relieving the bookkeeping of some of its complexities.

The Reserve for Depreciation on a Municipal Plant is the sum of the reserves for all the elements of the Plant, except Working Capital and Real Estate. Working Capital is money, supplies and materials of construction which are constantly being converted into operating expenses, replacements or extensions and which are being constantly replaced . Charges for these monies, supplies and materials are, of course made to the proper accounts through which they are absorbed into proper classifications.

BASIS FOR DEPRECIATION RESERVE. Since a Municipal Plant may not earn a net profit , but may only provide services at the actual cost of all production charges, it is obvious that the investment in the plant values does not form a logical basis for the service, and since a money value is necessary to measure the charge for depreciation the replacement costs at the time of replacement must be estimated and made a basis. Since these estimates are necessarily assumptions, the present price of the various elements of the plant has been adopted as a basis for the reserve for depreciation for the present time and for the purposes of this report, with the suggestions here made that the basis be investigated every three years, with a view of increasing or decreasing the basis as seems consistent with the requirements of the plant replacements, and in order to check the classification of the additions to

the plant which have been made during these three years.

A reserve for Depreciation when actually set aside in cash, and not used immediately for replacements will be logically invested and will earn an income upon itself, and this income, if invested, will result in further increase, so that if the fund is thus allowed to grow it will decrease the rate and consequently the amount of the necessary annual reserve for Depreciation. This method of producing the reserve is called the compound interest method, in distinction to the straight line method which does not consider the interest accumulations.

In view of the fact, however, that the Municipal Plant of the City of Austin has approximately reached the weighted average age of its elements, and that therefore replacements are now being constantly made to the extent of a large part of the amount which would represent the annual depreciation, we adopt the straight line method,, with the advice here given, that the method we well as the basis for the rate be investigated every three years.

DEPRECIATION RATES. An itemized inventory, based upon present replacement values, has been made for all buildings, boilers, machinery, etc., including $50,000 for the two new boilers, but not including the new boiler house. These values total somewhat less than the book value of the plant, but are raised proportionately to the book value, which is adopted as a basis for depreciation. The book values for Water and Electric lines are therefore used, which approximately fixes all values on the same basis, this value, as already explained is the approximate reproduction value of the properties and is therefore a convenient and logical basis for the rate for depreciation, and this basis should be maintained by the Department without change in book value, or in general method of keeping books.

The Rate of Depreciation is defined as the ratio of the annual losses in value due to the physical, functional and legal causes mentioned, to the replacement cost at present values. The reciprocal of the age in years, limited by all of the said causes, is the rate, or part of value lost each year by depreciation, thus if the expected life is 20 years the rate will be 1/20 which is 5%.

A Depreciation rate is, at best, an estimate based on the recorded experience in the duration of the life of property similarly situated and used. It is therefore difficult to find an exact basis for such a rate, it may be better worked out by each industry from its own experience tables.

Estimated percentages are applied to the values of various groups of properties owned by the Austin Water, Light and Power Department. These percentages which are related to the various groups as shown are considered fairly indicated by acceptable engineering experience, and are shown on the following tables:

TABLE OF VALUES AND DEPRECIATION RATES

Water supply devices and structures	$ 90,000	@ 2%	$1,800
Buildings, Pump House " Boiler House " Power "	118,000	@ 2%	2,360
Boilers and accessories	250,000	@ 4%	10,000
Engines, Condensers, Generators, switch-board and apparatus in Pump House	355,000	@ 5%	17,750
Water distribution system	558,000	@ 1½%	6,970
Electric " "	334,000	@ 6%	19,040
	$1,705,000		$57,920

Rate $\frac{57,920}{1,705,000}$ = 3.4% which is adopted.

EMERGENCY AND CONTINGENT EXPENSES.

It is proper to provide funds for emergencies and for contingent expenses in a municipally owned utility, such as damages due to storms, accidents to machinery or lines, failure of water supply, etc. requiring extraordinary expenses for providing continuous service.

The payments covering various expenses of the kind mentioned have occurred in the cited year September 1, 1920 to August 31, 1921, such as water shortage in the supply trenches, extraordinary expense in pumping due to the necessity of by-passing water from the mains to maintain water level in suction chamber of electric pumps which are constant capacity machines , and other such causes foe extra expense.

It is therefore considered sufficient, if the full allowance of expenses of all kinds, which includes these emergency costs, is made for the cited year. These emergency expenses will be eliminated hereafter by reason of proper provision for anticipated requirement, and the amount of these emergency expenses allowed in the cited year will therefore be available for other emergencies or contingencies should they arise in the next year. If, in any year, the amount provided for emergencies is not used, it should not be considered as net surplus, but kept as a reserve against larger future needs.

EXPLANATION OF GENERAL AND FINANCIAL STATEMENT.

Meters . The number of Water and Electric Meters in actual use for any year are shown in separate columns. For the year ending August 31, 1921, the number of meters added in that particular year is shown.

Power Production. The Electric Power produced is taken from the records of the station output which was measured by a totalling Watt-Meter this meter did not register all the electric power produced up to 1917, and since that date up to the present. The power used for the Sewer Air compresser, Circulating Pumps and for Statipn purposes, that is, for producing the metered power, is not included. The electric power tabulated is the gross power delivered to the lines, but does not show the quantity of power used or paid for, since line and other losses must be

deducted from these figures, see "Net Power Produced".

Steam Power produced is tabulated in a separate column and is the theoretical steam power used in pumping with the steam pump against 340 ft. head, using 100% displacement volume for quantity of water pumped, this power has been reduced to KWH. to obtain equivalent units for all power produced.

Water Pumped is taken from the plant records, which are shown for the full displacement capacity of the steam pump, and the product of the time of operation and rated capacity of the electric pumps. The records for the production by both steam and electric pump are subject to varying conditions of operation which affect their efficiencies. The actual efficiency of pump power has probably never exceeded 80% and often very much less.

Cost of Fuel. The amount paid annually for fuel is tabulated, and unit costs are shown in "Comparative Costs of Fuel and Power."

Earnings are taken from the annual reports of the Department to 1918 inclusive and furnished by special abstracts from the records for the subsequent periods.

Payments to Debt include all funds withdrawn by the City, including payments for bonds.

Expense includes 30% of the annual depreciation and the payments for the Old Water Works debt.

Additions to Plant include all items in the records as "Plant Betterments" and "Line Extensions."

PRODUCTION COSTS AND REVENUES.
YEAR ENDING AUG, 31, 1921.

TOTAL MEASURED POWER at Power House, including power for pumping	9,221,610 KWH.	
Total Operating Revenues from Electric		$307,747
" " " " Water		137,000
All Sources -		$444,747
Received for Gross Power per KWH. average total		.0482
" " " Electric per KWH. " "		.0475
" " " Water " " " "		.0503
" " " " " 1,000 Gallons, average		.0540
Received for net Electric Light, 2,837,092 KWH. sold for $223,874, average per KWH.		.0789
Received for net Electric Power, 1,132,414 KWH. sold for $64,477, average per KWH.		.057
Received for net Water, 824,500,000 Gals. sold for $127,412, average per 1,000 Gallons		.1543
Total Actual Cost, $504,000 to produce 9,221,610 KWH. average per KWH.		.054
Total, if based on corrected cost as shown $424,000 to produce 9,221,610 KWH. average per KWH.		.046
Amount of total water production paid for	32.8%	not including City
" " " electric " "	61.%	not including City

CLASSIFICATION OF THE USE OF WATER AND ELECTRIC POWER FOR YEAR Ending Aug. 31, 1921.

WATER. The inadequate supply of water and bad order of the Nordberg Pump during the cited year caused a low pump efficiency, the loss is estimated at 35% of the theoretical quantity of water pumped as shown on, "General and Financial Statement".

Theoretical quantity pumped -	2,549,000,000 Gallons
35% less in pump efficiency	892,000,000 "
Actual water pumped	1,657,000,000 "
Gallons sold, total	824,000,000 "
	833,000,000 "
Necessary waste, 15% of 1,657,000,000	250,000,000 "
Used by the City, Schools, etc.	583,000,000 "

The use of actual water, pumped as shown, is approximately 112 Gallons per capita, per diem, for all purposes, estimating population at 40,000 , agreeing fairly well with many other cities of the same size, having a liberal water supply. The use of Water by the City is greater than the average consumption, being approximately 30% of the total amount actually pumped. A more economical use of public water is indicated, and it is recommended that reasonable rules governing the said use be made and enforced, a saving of 30% to 40% of this public use is indicated in Austin under its present conditions. The cost of the Water used by the City is approximately 10¢ per 1,000 gallons, amounting to $58,000 per annum.

ELECTRIC POWER produced for all purposes, except station use and for pumping water, was:

Metered at Power House	6,483,000 KWH.
Line transformers and other losses, est.20%	1,300,000 "
	5,183,000 KWH.
Total sold for Light and Power	3,970,000 "
Total electric power used by City schools, etc.	1,213,000 "

The use of Electric Power for all purposes is not as closely related to population as the use of water, but for reference, the average ratio is shown; based on Estimate of Population as 40,000.

Total use of Electric service per capita, per annum	1,300 KWH.
Public " " " " " " " "	305 "
Customers use " " " " " "	710 "
" " " " " " " month	60 "
" " " Power " " " annum	290 "
" " " " " " " month	240 "

AVERAGE PRODUCTION

	KW. per Annum	KW. per Month	KW. per Day
Sold for Light	2,837,000	236,500	7,850
" " Power	1,133,000	94,500	3,150
Public Use	1,213,000	107,000	3,300
Total Losses	1,300,000	108,000	3,600
Total at Power House	6,483,000	540,000	18,000

The City uses an average of 3,300 KWH. of Electric Power per diem mainly for lighting, or 100,000 KWH. per month, which cost an average of approximately 5¢ per KWH. to produce and amounts to $60,000 per annum.

COMPARATIVE COST OF FUEL AND POWER

YEAR	TONS	TOTAL COST	COST PER LB.	POUNDS PER KWH.	COST PER KWH.
1918	29,849	53,552	.0894	9.7	.867
1919	28,173	64,059	.0114	8.9	1.015
1920	30,974	141,527	.0228	7.5	1.71
1921-1st 8 mos.	24,952	92,294	.0185	8.3	1.39
Sep.-Sep.'21	35,463	157,341	.0222	7.7	1.72

PRODUCTION COSTS AND REVENUES
Year Ending Aug.31,1921.

Total measured Production at Power House including power for pumping — 9,221,610 KWH.

Total Operating Revenues	$444,747	
Received for Gross Power per KWH. average		$ .0484
Operating Expenses including 30% of Depreciation	$307,489 Cost per KWH.	.0332
Operating Expenses including Additions	100,252	
	$407,741 " " "	.0442
Operating Expenses including Payments to City	96,873	
	$504,614 " " "	.0548
Operating Expenses including 30% of Depreciation	$307,489	
Operating Expenses if including Average Additions	80,000	
	$387,489 Cost per KWH.	.0418
Operating Expenses if including full Depreciation	37,200	
	$424,689 " " "	.0462

THE CITY'S STEAM POWER, ELECTRIC PLANT AND WATER SUPPLY.

LOCATION. The main Power House is located on the Colorado River at West Avenue, another Station used as an auxiliary pumping plant is located on the bank of the river between Corcket and Walsh Streets.

FACILITIES. The Main Plant is served by the I.&G.N. Ry., special tracks deliver Coal and heavy supplies to the bins, yard and Power House. The main water supply is taken from the sand beach near the plant. The pump room, boiler room, electrical plant, machine shop, fuel bins and yard for pipe, poles, etc. are grouped in a closely connected and convenient arrangement. The new Boiler House, now being built, is adjacent to the Electrical Plant. The arrangement is such that the electrical plant will be between the two Boiler Houses. This building is now under way, its economical location is not discussed herein because of the limitation of the purposes of this report.

THE WATER SUPPLY now taken through sand in filtration from the Colorado River has, at various times, required special arrangement to provide capacity to meet the needs and wastes of the growing City. The quality of water furnished by the present filter system still contains objectionable organiz matter and requires chemical treatment to exterminate and prevent germination of Bacilli, dangerous to

health. The treatment of the water with a germicide (liquid Chlorine is used) practically eliminates danger to health from the use of the water, but does not take away the suspended or combined impurities which cause "hardness" and objectionable odor, taste and color. The objections, added to the imminent need of greater capacity of water supply, have urged the Water Department to make search for a better and adequate supply. To acquire these conditions a well is now being drilled at Spicewood Springs, and qualified Geological Experts expect that this well will demonstrate that a sufficient supply of potable water will be produced by this and additional wells at the same location. If this expectation fails the City should immediately provide the proper structures and devices to clarify and purify the river water, which should include a low lift pump station near the river below Barton Springs, from which the water would be pumped to a settling basin after being treated at the Pump House with proper softening and coagulating chemicals. The water should be taken from the settling basin, where it will settle, during a continuous process, to gravity filters of proper construction and capacity. These filters should be provided in duplicate to facilitate constant service. From the filters the pure and clear water would be taken by the suction of the main pumps and delivered without again being exposed to light or air.

THE RESERVOIR is located about one and one-half miles north of the State Insane Asylum, it is about 12 feet deep and its top is approximately 230 feet higher than the intersection of Congress Avenue and Sixth Street The plan is circular, four hundred feet in diameter, and is divided into four compartments by radial divisions. Each compartment is separately connected to the Water Main; the reservoir having a total capacity of 10,150,000 Gallons. The reservoir is connected to the City's water distribution system by a single twenty inch pipe, which leads into several pipes of somewhat larger aggregate capacity at Forty-second Street near the Insane Asylum. The twenty inch main is approximately 9,400 feet long and is the limiting condition in the economical and efficient use of the reservoir, the friction losses being so great, during the peak period of water consumption, that if water is used from the reservoir alone, the pressure would be diminished throughout the entire system and the service would be inadequate. This condition is now remedied by having a pump in operation whenever large quantities of water are being used, including the peak load period of the electric plant. A study of the pipe friction conditions is indicated in order to determine the economical manner of developing the Reservoir into the function of the Austin Water Works, for which it was designed, namely, to be the balance wheel of the City Power plant's daily load, providing efficient and adequate service and at the same time decreasing the peak load, thus diminishing the need for "stand-by" boiler capacity, and providing a safety factor against service interruption which might occur through accident or damage to the pumping plant or water supply. The study of these conditions is not recited herein because of the limitations in the purpose of this Report.

STEAM BOILERS. The Steam producing plant consists of six Water

Tube Boilers, all in operating condition and two new boilers now being installed, listed as to make, age, size and condition as indicated by allowed pressure, as follows:

1 - Altman-Taylor	500 H. P.	160#	Installed	1902
1 - Heine	393 H. P.	145#	"	1904
2 - " (each 290)	580 H. P.	160#	"	1905
2 - B. & W. (each 404)	808 H. P.	160#	"	1911
	2,281 H. P.			
2 - Sterling (each 750)	1,500 H. P.	200#	Being installed.	

It will be seen that the present capacity is 2,281 H. P. nominal rating, these boilers are limited to 145 lbs. pressure, because the entire battery is limited by the weakest unit, these boilers are all required, whenever the load on machines approaches 2,000 KW. and are overloaded, with all units in use, when the electrical load goes over 2,200 KW. There is every indication that the electric load will often reach 2,300 KW. during the next three months, although the plant history shows that the daily high loads are carried for only a few minutes; the top 200 KW. are seldom prolonged beyond one hour, the top 400 KW. seldom as long as three hours, (see Plate No. 3, 4 and 5). It will be seen that these boilers must be carefully "nursed" until the two new ones are ready , as no boiler can be spared for repairs. The overloaded capacity further limited by the weak boiler to 145 pounds pressure, when the economic pressure should be at least 160 pounds, the practical impossibility of "forcing" the boilers with lignite as fuel , and the requirements after the time the high loads on the Electric Plant begin, November first, of keeping every boiler ready for instant operation, presents a situation requiring the most careful attention and indicates a "hurry up" call for the new boilers, every reasonable facility should be given to their installation and connection for service.

BOILER FEED WATER METER. It is recommended that a water metering machine be installed in the Boiler room and that records be made for water evaporated, also quantity, character and condition of fuel used and of power produced. The addition of the water weighing machine would provide needed apparatus to completely test the value of fuel and efficiencies of boilers.

ELECTRIC PLANT. The Electric Generating machines are all steam driven and consist of the units with all necessary condensers, circulating pumps, condenser pumps, separate excitation units, switch board, meter transformers, etc.

1 - Allis-Chalmers, tandem comp. engine and General Electric Generator	300 KW.
1 - Allis-Chalmers Turbo-Generator	500 KW.
1 - " " " "	1,000 KW.
1 - General Electric " "	2,000 KW.
Total capacity	3,800 KW.
Allowable overload for 1 to 2 hours (on all units except 300 KW. machine, which is a synchronomous motor) 25%	875 KW
	4,675 KW.

The "Demand Load" on this plant now reaches 2,250 KW. and the curve shown on Plate No. 6 indicates that the requirement for "Demand" or peak load will increase about 200 KW. per annum.

A study of this equipment and the foregoing conditions brings the conclusion that the dependable capacity of the plant is limited to the three first named units because if the 2,000 KW machine was disabled the other 3 units, only, would remain to carry the load, but if any two of the first three named units could not work then the remaining unit, even if it was the 300 KW machine, when added to the capacity of the 2,000 KW. unit would together amount to more than the combined capacity of the first 3 named machines, therefore the present dependable capacity is 1,800 KW. plus the overload allowed on the second and third of 375 KW. of approximately 2,200 KW. This indicates that the Electric Plant is working at a load near to its maximum capacity.

The "Demand" load curve which means the line through the maximum load points, shows by projection that the Electric Demand will soon exceed the capacity of the station as shown above , and since it is shown that another electric unit will be required by next year, and since it will require about one year to purchase, build and install a suitable unit, the following analysis of the station need is made.

The 300 KW. machine, and the 500 KW. machine are both old. The 300 KW. unit for its capacity, occupies too much space, and is not of proper type for operation in parallel with steam turbines. While it is in good order, its place is now in some small city where it will furnish proper service at a reasonable cost; in Austin City Plant it is obsolete and the room it occupies is valuable for other units. The 500 KW. unit, a turbo-generator, has become worn, is inefficient and obsolete and should be eliminated from the plant as soon as proper additions are made . These dispositions would leave the 1,000 KW. and the 2,000 KW. units. Another 2,000 KW. unit would provide 3,000 KW., or with any two machines working on a peak capacity for a short time, 3,500 KW. The "Demand" for more than 3,500 KW. during the next 5 or 6 years, at which time the 1,000 KW, unit will require replacement is rather remote. If at that time another 2,000 KW. unit is installed, then the plant will have a normal capacity, with any two machines working, of 4,000 KW. and a peak capacity of about 4,800 KW.

It is therefore recommended that a unit of 2,000 KW. normal capacity be purchased for installation by January 1, 1923, and that such disposition be made of the 300 KW. and the 500 KW. units as may be most advantageous, but which will allow them to stay in operation until the new unit is installed.

THE PUMPING STATIONS.

In the main station, the City's Water Works are supplied by the following pumps:

1 - Nordberg Cross Compound Steam Duplex, outside plunger packed pump 24" x 48" x 16", capacity at 40 r.p.m. is approximately 8,000,000 gallons per day at 85% efficiency. The pump is designed for 300 ft. head, but is working under 340 ft.

1 - Platt, 2 stage, centrifugal pump, operated by 500 H.P., C. W. Motor, 2300 V., 1,140 r.p.m., capacity of pump about 4,500,000 gallons per day. This pump is mechanically imperfect and is seldom used. The motor is good, however, and may be used on another pump, when required.

1 - 2 stage, centrifugal pump, operated by 500 H.P., C. W. motor, 2300 V., 1,140 r.p.m., capacity against 340 ft. head, rated at 6,000,000 gals. per day.

THE UPPER PUMP STATION. At this station there are installed one 2 stage centrifugal pump, operated by a 500 H.P., C. W. Motor, 2300 V., 1,140 r.p.m. The pump has a rated capacity of 6,000,000 Gallons per day.

1 - Worthington, Triplex Plunger Pump, operated by 300 KW., G. E. Synchronous Motor, capacity of Pump about 6,000,000 Gallons per day.

It will be seen that the Water Department has pump capacity of 16,500,000 gallons per day in the main station and 12,000 gallons per day in the upper station, each station's pumping units discharge into a single 24 inch pipe which in each case leads to the City's 24 inch main on West 6th Street.

If the stated capacities are correct, any two of the pumps working together, will supply the amount of water required in a day of maximum consumption, estimated as 6,500,000 gallons, but would not supply the period of highest requirement for that day. The reservoir, however, with any of the pumps, will satisfy periods of maximum demands during the day.

No arrangements now exist for testing the capacity or the efficiencies of any pumping unit, and it is recommended that test of capacity be made of each pump when working under specific conditions, by measuring the average velocities in the 24" mains which lead from each plant, by means of a Pitot Tube, these velocities should be measured and recorded for the following conditions:

(Pressures recorded for each test)

(1) Nordberg pump at 20 r.p.m.
(2) " " " 30 r.p.m.
(3) " " " 35 r.p.m.
(4) Platt " " rated speed
(4a) Turbo " " " "
(5) Worthington pump at rated speed
(6) Turbo " " " "

These records will then be available at all times for the purpose of determining the amount of actual water pumped, from which may then be computed the true cost of production, more correct allocation of common charges and a more correct basis for rates for both water and electricity

FUEL STORAGE CAPACITY. It is estimated that the Coal consumption will be 135 tons or 270 bbls. of oil per day. The bins adjacent to the present boiler house will contain enough lignite to last about 5 days, the outside bin and open storage may be used in energency to store lignite to last 3 days and the oil tanks have a total capacity of 1,600 bbls. or about enough to last 6 days, and the coal bins at the new boiler house will provide for 4 days , a total storage capacity for fuel to last 18 days. It is not economical for this plant to use stored lignite, except to the capacity of the bins, which is adjacent to the present boilers because it deteriorates in quality and is expensive to handle, and is subject to spontaneous combustion. Another objection to lignite stored at some distance from boilers lies in the fact that the manual labor necessary to deliver it to the boilers might be affected by the same strikes and other conditions which might be the very cause of the interruption of current delivery of fuel. Labor strikes, transportation failure or other causes may interrupt the regular delivery of fuel, in some cases without advance notice. The importance of uninterrupted water and electric service will fully warrant the Department keeping a fuel reserve to last a reasonable maximum period, which is estimated as 30 days. To provide additional storage, lignite to last for that time would therefore not be acceptable business policy or good engineering, even if the space for the bins was available on the ground at the plant.

The use of oil for stored fuel is indicated, in preference to lignite, because it deteriorates less in storage, it requires less volume for storage, it may be unloaded without cost, it would be brought to boilers by pumps, therefore independent of labor, and can be economically and preferably stored underground. The concrete top of the storage tank being useful as foundation and floor of warehouse or other building.

It is therefore recommended that a reinforced concrete oil tank of 16,000 cubic feet capacity be provided and kept filled with fuel oil for emergency periods. This tank would probably be 12 feet deep and have 1,400 square feet area of floor and would hold approximately 4,000 bbls. of oil, equivalet to about 2,000 tons of lignite, which capacity, together with the permanent bins already provided will be a sufficient storage to last for 30 days.

ELECTRIC AND WATER WORKS CUSTOMERS.

STATION CAPACITY. An analysis of the growth of the Water Works Station shows that the number of meters installed has increased at the rate of the normal growth of the population and that the number is now about the saturation point of the growth so that no abnormal growth may be expected in the near future. The daily output of the station during the summer months is from 5,000,000 to 7,000,000 gals., or about the maximum capacity of the largest pump. Some of this peak load demand is furnished

by water flowing back from the City reservoir which in turn is filled during the light load period of the day. There seems to be some shortage of water at the intake during this time which must be remedied by a larger supply from some other source. A further mention of the pump load will be made under Electric Station load and Boiler Plant Load.

ELECTRIC STATION.

THE NUMBER OF METERS connected to the Electric Light circuit has increased during the past 12 years more rapidly than the growth in the population of the City. Twelve years ago the number of meters was much below the saturation point, but it is rapidly approaching this point so that in the near future the growth will become more nearly normal.

ELECTRICAL ENERGY of the type used for distribution from the City Power Plant can not be stored in a reservoir during light load periods to be used again during the heavy loads. In consequence the demand on the power generating apparatus at the peak period of the day is the entire demand of the consumers at that time. This peak load increases from year to year from two causes:

a. The natural growth of the consumers.

b. The growth of the demand of each consumer.

As a consequence of these two causes the peak load demand of the Electric Plant has increased rapidly until it has now reached a point where the addition of more equipment is again necessary. In 1911 the maximum demand of the station was about 1,000 KW., in 1921 at the same period it will be 2,200 KW. One peak during the San Sam parade in 1921 reached 2,500 KW. for a short time. These peaks represent the maximum safe output of the largest generator or the combined output of all the rest of the equipment in the station if they operate properly in parallel. If during this peak period it becomes necessary to start up the large electric pumps , due to accident to the steam pump, the electric station apparatus could not carry the entire load in case of breakdown of the larger electric unit.

THE DEMAND during the 24 hours of the day is not constant on the electric station, but is nearly twice as great between the hours of 6:30 and 8:30 as during the remainder of the day. It is not to be inferred that the power is wasted during the light load period, but that the investment occasioned by the peak load is not earning its proportionate share of return during the lighter portions of the load. If other loads could be found to help out this condition, and to furnish a more uniform total load curve a greater income could be realized from the same investment. Two important loads have been suggested to you.

a. The Austin Street Railway Company.

b. The Lone Star Ice Company.

These loads will be taken up and analysed in connection with the present load on the electric plant.

THE AUSTIN STREET RAILWAY LOAD. The effect of adding the Austin Street Railway Load to the present power plant load is shown on Sheet No.5. It is seen that the maximum demand of this load is about 500 KW. and that the greater part of this demand comes during the lighter period of the

present plant. However, the demand at the peak period of the lighting load, as well as the sudden changes of this load (not shown on the curve) due to starting and stopping cars, is such that it would raise the total power output peak about 400 KW. Hence this load can not be taken on safely with the present equipment. With proper additions to equipment this load would be very desirable. It is interesting to note that power was originally supplied to the Austin Street Railway from the old power plant at the Dam.

LONE STAR ICE COMPANY LOAD. The estimated steady 24 hour load of the Lone Star Ice Company during the summer months is about 400 H.P. During the winter, when the load on the City Power Plant is the heaviest, the load of the Ice Company would be the lightest, about 125 H.P. If arrangements could be made with the Company to shut down its machines from 6:30 to 9:00 daily during the winter, the load would be desirable at present.

It is shown elsewhere herein, under "Boilers" and "Electric Plant" that the City Plant can not take the Street Car load with its present equipment, the electric generating equipment can not be increased to deliver additional power in less than one year; the Street Car Company load is therefore not considered acceptable at this time. There are many reasons however why the City's Power Plant should take a contract to deliver power to operate the Street Car Service which would show advantage to both the City and to the Street Car Company, and if the power plant at the Dam is placed in operation, at an early date, as now seems probable according to a report from the Receiver of that plant for the legal controllers of the property, then the City could with advantage, undertake the supply of power to the Street Car Company. Under the existing conditions the City Plant can not assume the load and therefore no rate is provided. A chart showing the effect of the use of power by the Street Car Company for a typical day is shown, as it would affect the expected city load for its typical day, on Plate No. 5 herein.

POWER FOR THE LONE STAR ICE COMPANY load will be needed about March 15, 1922, at which time it is confidently expected that the new boilers now being installed will be in operation. The charts on Plate Nos. 3 and 4, show that the city may safely assume this load and because of reasons shown under "Lone Star Ice Co. Load", should be taken by the City Plant if rate for such power can be agreeably fixed. Chart No.4 shows that the summer daily load of 7,200 KWH. would be furnished entirely without affecting either the number of boilers or generators in use, except for 1-1/2 hours between 6 and 8 o'clock P. M. and at those hours any generating units of the city present Electric Equipment, able to take the indicated City Load at these hours, would be able to carry the Ice Company Load also as explained in "Electric Plant", and since the load is practically uniform, the cost to the City Plant of producing this load in addition to its other load would be less than the proportionate cost. Fuel cost would be somewhat less proportionally, but the "stand by" condition imposed upon the boilers to provide for the increased peak warrants the Fuel Cost as a direct charge. The City has no load of this character at present and therefore a comparison with any

existing rate would not be reasonable, but a charge over the fuel cost which would allow fairly for the proportionate charge of the Company's expense, depreciation and a reasonable charge for "Value of Service" would result in a rate, fair to both the city and to the Ice Company, and has been computed to be 2.5¢ per KWH.

This rate provides for the customers power factor at 90% and is based upon the provisions by the Ice Company to maintain that power factor. The contract for this power will be based upon the character of the load, which the customer must guarantee by proper minimum payments, based upon the City's right to charge for being "ready to serve", this charge should be 66-2/3% of the expected monthly load.

ANALYSIS OF REVENUES, EXPENSES AND DISBURSEMENTS
FOR THE YEAR ENDING AUGUST 31,1921.

From special reports for the disbursements and revenues of the year ending September 1, 1921, from the accounting division of the Water and Light Department, the following statement is made:

Total Collections		$444,747
Operating Expenses	$307,489	
Plant and Line Additions	100,252	
Payments to City	96,873	
Deficit		59,867
	$504,614	$504,614

Considering that the cited year's expenses and disbursements provide a fair and safe criterion upon which to base the future financial conditions of the Department's business the following analysis, as applied to allowable conditions, is made:

From inspection of the Annual Reports of the Water and Light Department and from statements of the Officers and Superintendents it is deduced that 30% of the charges for Maintenance should be charged to replacement and taken from a depreciation reserve. For the year cited these maintenance charges are $61,443 so that $18,500 (30%) of the depreciation for the cited year has been provided in the expense already paid.

The amount provided for Depreciation for this year should be 3.4% of $1,638,727 or $55,700 from which sum the $18,500 is deducted, leaving only $37,200 to be provided.

The amount marked "Payments to City" of $96,873 has been transferred from the Water and Light Department and deducted from its revenues without regard to the existence of any net surplus from which payment may be made. For the purpose of this analysis, this sum will be omitted and the actual financial status of the Water and Light Department shown.

The practice of withdrawing money from the Water and Light Department for the operation of other departments of the City Government when a surplus existed was proper when there was a real surplus. The deficit above shown, however, is due to withdrawing money when no real surplus existed, as shown by the comparison of the two statements herein. This is similar to making a collection before it is due or provided for.

The amount expended for Plant and Line extensions is shown in the "General and Financial Statement", under "Additions to Plant" to have been $100,252 which amount is $2,500 more than the department expended in the two previous years 1919 and 1920 together, and is more than the Water and Light Department ever expended in one year, except 1917, when the new Turbo-Generator and much electric conduit was added to plant values. The projection of the Value of Plant curve from 1920 would have shown an expected requirement for additions to the plant of approximately $80,000. If these values are used for the cited year the result would be:

September 1, 1920, to September 1, 1921:		
Total Earnings (Collections)		$444,747
Operating Expenses	$307,489	
Plant and Line Additions	80,000	
Depreciation not included in maintenance ($55,700 -$18,500)	37,200	
Net surplus	20,059	
	$444,747	$444,747

It would thus appear that if no further payments were made to the City, and if there was no deficit to make good, the earnings of the Department on the existing rates are sufficient to pay for the Operating Expenses, necessary Additions to Plant Value, and to provide a depreciation fund for current and latent depreciation.

Fuel values have had an important bearing on the expenses of the Department during the past three years, the increase in the cost of this item alon since 1918 has continued until the cost for fuel in the year ending September 1, 1921, is 35.4% of the total revenues for the same year, compared with a fuel cost of 13.6% of the total revenues of 1918. The value of fuel as affecting production costs is shown on the following table:

FUEL VALUE AS AFFECTING PRODUCTION COSTS.

COST OF FUEL COMPARED TO TOTAL REVENUES.

YEAR	FUEL COSTS	REVENUES	
1916	$34,856	$315,586	11.1%
1917	38,404	333,843	11.4%
1918	53,552	390,223	13.6%
1919	64,059	353,182	18.1%
1920	141,527	459,922	30.9%
Sept.'20 Sept.1921	157,341	444,747	35.4%

It is thus shown that an additional cost, amounting in the cited year to nearly $100,000 must affect the amount of money available for payments outside of the actual expenses of the plant.

The payments to the City for 1919, 1920 and the first eight months of 1921 have amounted to $217,500 or about $72,500 per annum. The withdrawal of $156,000 in one and two-thirds years, ending September 1, 1921, added to the additional cost of coal as shown, has depleted the treasury and caused the present deficit.

It appears that the present price of Coal may not be materially

reduced and it also appears to be conclusively proved that the Department may not make any payments to the City under the present schedule of rates.

Supplies of material and stock on hand have decreased since 1918 and the amount of this decrease should, in fact, be added to the present deficit, since that much of the working capital has been used up. These amounts are shown in the expense accounts as changes in amount of working capital, but should appear as a deduction from the value of the plant, shown as follows:

1918 - December 31st - Stock and materials on hand -	$100,830
1921 - September 1st - " " " " "	76,616
Difference in 2-2/3 years	$ 24,214

THE DEFICIT. The amount of cash on hand on January 1st, 1919, was $7,959 and the deficit on September 1st, 1921, was $68,279 so that the Department used up the working capital in supplies to the extent of $24,212 and in addition, the cash balance , and $68,279 borrowed money besides, so that the cost of operation and the payments to the City in the years mentioned has resulted in a deficit of $102,450 instead of $68,279,or a total reduction in the Department's assets, for which no provision was made of over $100,000 since January 1st, 1919.

The deficit has actually accrued in the last year since the working capital; cash and supplies on September 1, 1920, was $103,000, or only about $6,000 less than it was on December 31, 1919.

If it is desired to pay off the deficit and restore the working capital, the amount required would be approximately $100,000. The present rates would provide this amount in addition to expenses and depreciation reserve in 5 years, as shown hereinbefore.

If it is desired to pay this amount sooner, the rates would have to be increased to provide more revenue. It may be easily shown that 1% increase would provide $4,500 more money per annum, therefore 10% would pay the deficit and restore the working capital in a period of 15 months.

An increase of this amount could be provided by an adjustment of the present rates to a practical, logical basis, without raising the minimum charge and making the changes in the rates in such a manner as will produce the required revenue, if so desired, so that the increase would not be seriously felt by the Water and Light customers, some rates would be lowered, some remain as they are and some raised; such a schedule should be provided for both services, even if the revenues are not required to be increased.

If it is desired to have the Water and Light Department pay its obligation to the City, then the amount required annually should be determined in advance and rates for service to produce the additional revenue should be placed in effect, in accordance with the proper practice in such cases discussed in "Payments to the City".

It is shown elsewhere herein that during the next year there will be required large additions to Plant, the cost of which will be more than the average $80,000 annual provision for additions. It is not the purpose of this report to show designs or estimates of these necessary improvements, but mention is made for the purpose of showing a basis for a requirement of extra funds for the next year, approximate figures are placed as the antici-

pated costs of these items, but are only approximate estimates for final use in fixing the amount of money required.

(1)	Completion of Boiler House	$40,000
(2)	New Steam connections, etc. to complete the boiler installation	5,000
(3)	Oil Tank of 6,000 bbls. capacity	9,000
(4)	Spicewood Springs connection to reservoir $160,000	
(4a)	or, Water Purification system at River	90,000
(5)	2,000 KW. Steam Turbo-Generator, with condensers, exciters, switch-board, etc. complete	90,000
		$234,000
(6)	Extensions to lines	40,000
		$274,000
	Less amount provided	80,000
		$194,000

This sum is too large to provide from the current revenues that would be created by increasing rates for service because such rates would be substantially 40% over the rates in effect at present in addition to any increase which might be provided for the purpose of paying off the deficit, or for providing any payments to the City.

It is therefore recommended that the City provide sufficient money by its own bonds to pay off the deficit in the Department's working capital, and to pay for the additions amounting to approximately $200,000 or a total of $300,000 and that rates for water and power be fixed, which could provide $50,000 per annum additional revenues in order that the Department would pay to the city this amount annually as credit to its debt, for the next ten years, or until such time as conditions indicated a smaller or larger annual payment. The increase of the rates for service would be about 12% and by making a proper schedule for same would not be objectionable, especially in view of the increased value of service indicated. "

REPORT ON

RATES FOR WATER, LIGHT AND POWER

For the

WATER AND LIGHT DEPARTMENT

AUSTIN, TEXAS.

By

Frank S. Taylor

Consulting Engineer.

To the Hon. Mayor and City Council

of Austin, Texas.

Gentlemen:

In accordance with your directions the rates for Water, Electric Light and Power services have been completed to produce revenues for the follow-

ing purposes:

(1) To pay operating expenses of the Water, Light and Power Plant.

(2) To " " " " " Sewer System.

(3) " " for the necessary current additions to the plant and distribution system.

(4) To provide for current depreciation and for a reserve for latent depreciation.

(5) To provide for emergency and contingencies.

(6) To " " an annual payment of $39,000 on its debt (bonds) to the City.

(7) To provide $9,000 for an additional oil reservoir.

(8) To provide $35,000 towards a comprehensive and perfected Water Purification System.

(9) To provide $60,000 with which to complete the installation of a 2,000 KW Turbo-Generator, (the balance being a "replacement" and charged to "Depreciation Reserve")

The new rates required to produce the necessary revenues to accomplish the above purposes are based upon a combination of production costs and service values, all related to a complete classification of the 16,000 customers, who were served by the Water and Light Department for the year ending September 1, 1921.

The water charges under the old schedule are lower in proportion to cost and service than the electric light charges, which with the additional expense of operation of the sewer system requires a somewhat greater proportionate increase in the Water Rates.

The Electric rates under the old schedule were not proportionately applied, but under the new schedule presented herewith the smallest and largest customer is charged with equal consideration.

The Electric Power rates, submitted, give consideration to load factor and power factor, and are designed to give lower rates to customers using a larger proportion of "off peak" current. The rates should give an equitable charge for current consumption, at the same time protecting the station's capacity and providing a liberal discount to customers using power at a high load factor.

The Reserves which will be created by the revenues from the new rates will make up the Department's overdraft in six months, and will show a credit balance to the Department's cash on hand for the following five or six months, but at that time withdrawals from the reserves for the purposes shown will again deplete the credit balance and cause another overdraft at about the end of next year, that overdraft however will be permanently paid in eight or nine months later or by August or September, 1923, after which a reduction of the rates may be made on the basis of the conditions existing at that time.

(Sgd) Frank S. Taylor.

APPLICATION OF INCREASED REVENUE

For one year.

Total expected Revenues			$565,000
	Reserves	Immediate Disbursements	
Operating Expenses		247,000	
Sewer Operation		30,000	
Line Additions		40,000	
Depreciation (current replacements)		20,000	
Plant Addition (Boiler House, etc.)		40,000	
Depreciation (reserve)	$40,000		
Payment on bonds	39,000		
Reserve for Turbine	60,000		
Emergency	40,000		
Fuel Tank		9,000	
		386,000	
Water Supply	35,000	214,000	
		600,000	$565,000
Deficit		102,000	
Balance to be made up in 1923			137,000
		$702,000	$702,000

Revenues Sep. to Sep. '21	$444,000
Increased Power Revenues	17,100
" Water "	65,800
" Light "	55,800
	582,700
3% for minus variation	17,000
	$565,700

MONTHLY WATER RATES.

Minimum less than	1,500	Gallons	$ .50 Minimum
Next	2,000	"	.30 per 1000 G
"	12,500	"	.25 " "
"	34,000	"	.20 " "
"	200,000	"	.15 " "
"	300,000	"	.12 " "
Over	550,000	"	.11 " "

Openings in mains will be made only when customer agrees to the following minimum monthly charge.

3/4" or less	$ .50
1"	3.00
2"	12.00
3"	27.00
4"	48.00
6"	108.00

PROOF OF WATER RATES.

	Customers		Bill	
1,500 Minimum	2,323	@	.50	1,161
5,700	4,233	@	1.65	6,968
20,000	559	@	5.03	2,811
56,666	84	@	12.03	1,010
541,000	35	@	75.95	2,658
3,758,000	7	@	429.80	3,010
				17,618
Correction 86/890 = 10%				1,700
Per month				15,900
Per annum				190,800
Less Revenues Sep. to Sep. '21				125,000
Increase				65,800

MONTHLY RATES . ELECTRIC LIGHT.

1st	3 KWH	16 2/3 ¢	Per KWH Minimum
Next	37 "	12 ¢	" "
"	60 "	11 ¢	" "
"	250 "	8¢	" "
"	350 "	6¢	" "
Over	700 "	4¢	" "

Every opening to be separate bill, except when buildings served are on same property, in which case a charge of $ .25 extra will be made for each extra building served.

PROOF SHEET. ELECTRIC LIGHT.

2,623,000 KWH. Increase $ 75,000 per Annum

	Customers		Bill	
3	524	@	.50	262
22	5,200	@	2.78	14,456
104	680	@	11.86	8,064
291	112	@	26.82	3,003
708	37	@	52.86	1,455
3,250	13	@	154.54	2,019
				29,259
Less correction 65/327 = 20 %				5,840
Per month				23,400
Per annum			280,800	
Less Revenues Sep.1,'20 to Sep.1,'21			225,000	
Increase			$ 55,800	

MONTHLY ELECTRIC POWER RATES.

1ST	30 KWH	9 ¢
Next	70 "	8 ¢
"	150 "	7 ¢
"	400 "	6 ¢
"	600 "	5 ¢
"	1,250 "	4 ¢
"	2,500 "	3 ¢
Over	5,000 "	2-1/2¢

Basis 40 % or less of constant use of maximum demand.

Customers who have a higher load factor may obtain a reduction based upon load factor and total quantity of current used, monthly.

All power installation above 15 H.P. rated capacity shall be based on 90% power factor; each opening to be on separate bill.

INSTALLATION OR MAXIMUM DEMAND CHARGE.

Minimum charge per month less than	1/2	H.P. motor	$1.00	
" " " "	1/2	" "	1.50	
" " " "	1	" "	2.50	
" " " " to	5	" "	2.00	per H.P.
" " " " "	10	" "	1.75	" "
" " " " over	10	" "	5% of connected	

constant rated load at regular rate.

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STOVE RATE 4 ¢ per KWH. Minimum $2.50

Customers may receive a 25% discount by signing statement on each bill, "I have used no electric current charged on the above bill between the hours of 6:30 and 8:30 P. M."

PROOF SHEET. ELECTRIC POWER.

L,433,000 KWH. Increase $ 20,000

		Monthly			
210	Average	40 KW		3.50	735
60	"	125 "		10.05	603
50	"	291 "		21.26	1,063
24	"	625 "		41.30	991
10	"	1,250 "		72.80	728
10		3,500 "		152.80	1,528
1		30,833 "		743.62	843
73	"	125 "	Stoves	3.75	239
					6,730
Add correction	14/1,433 = 1 %				70
Monthly					6,800
Annual				81,600	
Less Revenues Sep. to Sep. '21				64,477	
Annual Increase				17,123	

COUNCILMAN EYRES introduced the following resolution:

Whereas, there now exists in the Water, Light and Power Department of the City of Austin an overdraft of approximately $70,000, which overdraft has been produced by continuing the schedule of rates in effect before the war, and by the enormous increase in the cost of fuel and other operating expenses during and after the war; and

WHEREAS, on account of the same causes, the stock of materials and supplies of said Department has been depleted approximately in the amount of $30,000, thereby producing a present total deficit in said Department of over $100,000; and

WHEREAS, larger items, such as steam engines, boilers, pumps and motors are becoming worn out and obsolete, and must be replaced in order to continue the service to the people, but no reserve from the present revenues is made to provide for the replacement of these large and expensive elements of the plant when they become useless, and it has been computed that about $40,000 annually will be required for such purposes, in addition to such replacements as have been regularly made in the past; and

WHEREAS, it is necessary that a fuel tank of sufficient capacity to provide an adequate reserve for all reasonable emergencies should be provided and it is computed that such fuel tank will cost $9,000; and

WHEREAS, there is now under construction a boiler house which is necessary to house boilers already purchased but not yet installed, which boiler house will cost the sum of $40,000, the payment of which must be provided for out of the revenues of the plant during the early part of the coming year; and

WHEREAS, it is urgent that the present water supply be enlarged and improved and that means be provided for such purpose and it has been estimated that sum of $35,000 at least will be required during the next year for such purpose; and

WHEREAS, the Water, Light and Power Plant is now inadequate to reliably supply the present and increasing demands for service, and there exists a menace to the operation of the plant in that no provision is made for additional equipment to insure the safety of service in case of the failure of any unit, and to that end provision should be made immediately for the purchase and installation of a steam turbine at a cost of $100,000, which turbine cannot be purchased except for cash; and

WHEREAS, it will be necessary to provide the sum of $39,000 by July 1, 1922, for the payment of the annual installment of water and light bonds, and this payment must be provided for either out of the current revenues of the Water, Light and Power Department, or by direct property taxation, and it is deemed proper and legal by the City Council that such payments should continue to be provided for out of the revenues of said Department, but it is found that such payments cannot be continued out of such revenues under the present rates; and

WHEREAS, it has been proposed to furnish free sewer service to the citizens of Austin and if such policy is put into effect, it will be necessary to provide out of the public funds the sum of at least $30,000 per annum

for the maintenance and operation of the Sanitary Sewer System and such expenses must be provided for either by direct property taxation or by other revenues of the city and it is deemed logical and proper that such expenses should be provided for out of the revenues derived from water customers; and

WHEREAS, it has been shown by an Engineering survey of the Water, Light and Power Plant and its needs, that in order to accomplish any of the above matters, as well as to supply the necessary revenue for the operation and maintenance of the Sanitary Sewer System, it will be necessary to increase the present water, light and power rates, and it is the opinion of the City Council that each of the above matters presents a public emergency, for which provision should be made without further delay; and

WHEREAS, it is necessary to determine without further delay the rates for water, light and power to be charged during the next fiscal year, which begins January 1st, 1922, in order that the Superintendent of the Department may report to the Mayor his estimate of the receipts and needs of the Department for such year, and that proper appropriations be made in the budget of the Department for such year, as required by the City Charter; therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

That the following rates and regulations are hereby adopted:

MONTHLY WATER RATES.

Less than	1,500	Gallons	$ .50	Minimum
Next	2,000	"	.30	per 1000 Gallon
"	12,500	"	.25	" " "
"	34,000	"	.20	" " "
"	200,000	"	.15	" " "
"	300,000	"	.12	" " "
Over	550,000	"	.11	" " "

Openings in mains will be made only when customer agrees to the following minimum charge. Every opening to be on separate bill.

3/4" or less	$ .50
1"	3.00
2"	12.00
3"	27.00
4"	48.00
6"	108.00

MONTHLY ELECTRIC LIGHT RATES.

Ist	3KWH.	16-2/3¢	per KWH.Minimum
Next	37 "	12¢	" "
"	60 "	11¢	" "
"	250 "	8¢	" "
"	350 "	6¢	" "
Over	700 "	4¢	" "

Every opening to be separate bill, except when buildings served are on same property, in which case a charge of 25 ¢ extra will be made for each extra building served.

MONTHLY ELECTRIC POWER RATES.

Ist	30	KWH.	9 ¢
Next	70	"	8 ¢
"	150	"	7¢
"	400	"	6¢
"	600	"	5¢
"	1,250	"	4¢
"	2,500	"	3¢
Over	5,000	"	2-1/2¢

basis 40% or less of constant use of maximum demand.

Customers who have a higher load factor may obtain a reduction based upon load factor and total quantity of current used, monthly.

All power installation above 15 H. P. rated capacity shall be based on 90% Power Factor, and such installations that operate below 90% Power Factor shall be penalized by adding to the monthly bill as figured by the above rates 1/2 of 1% for each 1% decrease in Power Factor below 90%

INSTALLATION OR MAXIMUM DEMAND CHARGE.

Minimum charge per month less than	1/2	H. P.	motor	$1.00
" " " "	1/2	"	"	1.50
" " " "	1	"	"	2.50
" " " " to	5	"	"	2.00 per HP
" " " " "	10	"	"	1.75 " "
" " " " over	10	"	"	5% of connected

constant rated load at regular rate.

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STOVE RATE 4¢ per KWH. Minimum $2.50

Customers may receive a 25% discount by signing statement on each bill, "I have used no electric current charged on the above bill between the hours of 6:30 and 8:30 P. M.

BE IT FURTHER RESOLVED: That the above rates and regulations shall become effective on December 10, 1921, and bills for service shall be rendered consumers under said rates on meter readings on and after January 10, 1922, and all rates and regulations in conflict herewith are expressly repealed.

BE IT FURTHER RESOLVED: That the Superintendent of Parks and Public Property be and he is hereby authorized and instructed to publish a notice of the above rates and regulations one time each in "The Statesman" and "The Austin American", and to provide all necessary printed schedules, bills and instructions to place said rates and regulations in effect.

The above resolution was adopted by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

Councilman Haynes moved that, upon the recommendation of C. L. Woodward, Chief of the Fire Department, permission be granted to J. B. Pope to erect a two story, hollow tile building in the rear of Tenth Street and Congress Avenue . Motion prevailed by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

The Council then recessed.

SPECIAL MEETING OF THE CITY COUNCIL:

Austin, Texas, December 14, 1921.

The Council was called to order by the Mayor. Roll call showed the following members present: Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; absent, none.

The report of the Board of Equalization was presented and read, and Councilman Haynes moved that the report be received and filed, and that the thanks of the City Council be extended to the members of said Board for their earnest and unselfish work. Motion prevailed by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

Councilman Copeland nominated J. A. Anglin as special policeman to act as merchant police. Nomination was confirmed by the following vote: Ayes, Mayor Yett, Councilmen Eyres, Haynes and Searight, 4 ; nayes, none Councilman Copeland not voting.

The Council then adjourned . Jr. Assistant City Secy.

REGULAR MEETING OF THE CITY COUNCIL:

Austin, Texas, December 15, 1921.

The Council was called to order by the Mayor. Roll call showed the following members present: Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; absent, none.

Councilman Haynes moved that the reading of the Minutes of the last meetings be suspended until the next regular meeting. Motion prevailed by the following vote: Ayes, Mayor Yett, Councilmen Copeland, Eyres, Haynes and Searight, 5; nayes, none.

The following report of Fred Sterzing, Assessor and Collector, was